R E P O R T R E S U M E S

ED 020 419 08 VT 005 417

A COMPARISON OF THE EFFECTIVENESS OF THE PROJECT AND COOPERATIVE METHODS OF INSTRUCTION ON SELECTED COMPETENCIES IN DISTRIBUTIVE EDUCATION AT THE SECONDARY LEVEL. RESEARCH REPORT NO. 4.

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REPORT NUMBER BR-5-0048 PUB DATE APR 68
REPORT NUMBER BR-7-0211
GRANT OEG-3-7-070211-2679
EDRS PRICE MF-$0.25 HC-$0.96 22P.

DESCRIPTORS- *DISTRIBUTIVE EDUCATION, *COOPERATIVE EDUCATION, *PROJECT TRAINING METHODS, *EDUCATIONAL METHODS, *COMPARATIVE ANALYSIS, GRADE 12, GRADE 11, HIGH SCHOOL STUDENTS, ECONOMICS, SALESMANSHIP, STUDENT CHARACTERISTICS, TEACHER ATTITUDES, CONTROL GROUPS, ACADEMIC ACHIEVEMENT, MICHIGAN,

A COMPARISON OF THE EFFECTIVENESS OF PROJECT AND COOPERATIVE METHODS OF TEACHING HIGH SCHOOL DISTRIBUTIVE EDUCATION IN THE COMPETENCY AREAS OF ECONOMIC UNDERSTANDING AND SALES COMPREHENSION USED (1) 251 GRADE 12 STUDENTS IN DISTRIBUTIVE EDUCATION PROJECT METHOD CLASSES, (2) 299 GRADE 11 STUDENTS IN SCIENCE OR ENGLISH CLASSES, (3) 216 GRADE 12 STUDENTS IN DISTRIBUTIVE EDUCATION COOPERATIVE METHOD CLASSES, AND (4) 221 GRADE 12 STUDENTS IN SCIENCE OR ENGLISH CLASSES IN 16 SCHOOLS. EACH OF THE DISTRIBUTIVE EDUCATION CLASSES MET A SINGLE PERIOD FIVE DAYS A WEEK, BUT THE GRADE 12 COOPERATIVE METHOD CLASSES ALSO HAD ON-THE-JOB TRAINING AT LEAST 15 HOURS PER WEEK. DATA WERE COLLECTED ON--(1) SOCIOECONOMIC STATUS, (2) STUDENT PRIOR ACHIEVEMENT BASED ON STANDARDIZED TESTS OF READING, (3) STUDENT SCORES ON STANDARDIZED TESTS OF ECONOMIC UNDERSTANDING, SALES COMPREHENSION, AND SALES TERMS, (4) STUDENT AND TEACHER PERSONAL DATA, AND (5) DISTRIBUTIVE EDUCATION TEACHER SCORES ON A TEACHER ATTITUDE INVENTORY. MAJOR FINDINGS WERE--(1) THERE WAS NO SIGNIFICANT CORRELATION BETWEEN THE VARIABLES OF STUDENT SOCIOECONOMIC STATUS, AGE, SEX, AND TEACHER ATTITUDE AND STUDENT SCORES ON READING COMPREHENSION, ECONOMIC UNDERSTANDING, AND SALES COMPREHENSION, (2) THE ACHIEVEMENT OF COOPERATIVE METHOD CLASSES WAS SIGNIFICANTLY HIGHER ON TESTS OF SALES COMPREHENSION THAN THAT OF THE PROJECT CLASSES, (3) THERE WAS NO SIGNIFICANT DIFFERENCE BETWEEN SCORES OF THE PROJECT AND COOPERATIVE METHOD GROUPS ON THE TEST OF ECONOMIC UNDERSTANDING, (4) THERE WAS A POSITIVE CORRELATION BETWEEN STUDENTS' PRIOR ACHIEVEMENT AND SCORES ON THE ACHIEVEMENT TESTS OF ECONOMIC UNDERSTANDING AND SALES COMPREHENSION, AND (5) THE CONTROL GROUPS DID AS WELL OR BETTER THAN DISTRIBUTIVE EDUCATION GROUPS ON ECONOMIC AND SALES COMPREHENSION TESTS. (MM)

BR-5-0048
PA-08

RESEARCH & DEVELOPMENT PROGRAM
In Vocational-Technical Education

RESEARCH REPORT NO. 4

ED020410

A Comparison of the Effectiveness of the Project and Cooperative Methods of Instruction on Selected Competencies in Distributive Education at the Secondary Level

Department of Secondary Education and Curriculum / College of Education / Michigan State University
East Lansing, Michigan / April, 1968

VT005417

RESEARCH & DEVELOPMENT PROGRAM
In Vocational-Technical Education

Project No. 5-0048
Contract No. O.E.5-85-111

-and-

[redacted]
Contract No. O.E.G.3-7-070211-2679

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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A COMPARISON OF THE EFFECTIVENESS OF THE PROJECT AND COOPERATIVE METHODS OF INSTRUCTION ON SELECTED COMPETENCIES IN DISTRIBUTIVE EDUCATION AT THE SECONDARY LEVEL

-by-

Edward T. Ferguson

RESEARCH REPORT NO. 4

The research reported herein was performed pursuant to a contract with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

Department of Secondary Education and Curriculum
College of Education
Michigan State University
East Lansing, Michigan
April, 1968

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ACKNOWLEDGEMENTS

The author wishes to acknowledge the cooperation and assistance of all those who made this study possible. A special debt of thanks is owed to William Woolf and Donald Pettit, graduate research assistants, for their many long hours of work on the study.

Sincere thanks go to the 17 teachers of distributive education, the school administrators, and the students who cooperated with the researcher in the conduct of the study. The participating schools and the research associates in distributive education are listed below.

BEDFORD HIGH SCHOOL
Bedford
John Stafford

BENTON HARBOR HIGH SCHOOL
Benton Harbor
William Stull

EDWARDSBURG HIGH SCHOOL
Edwardsburg
Marvin Roney

FITZGERALD HIGH SCHOOL
Warren
Shirley Bayne

GAYLORD HIGH SCHOOL
Gaylord
Richard E. Ryan

GROSSE POINTE HIGH SCHOOL
Grosse Pointe
Maynard A. Leigh

HIGHLAND PARK HIGH SCHOOL
Highland Park
Glen R. Donahue

INKSTER HIGH SCHOOL
Inkster
Delida Moultrie

LAKE SHORE HIGH SCHOOL
St. Clair Shores
Robert Gabridge

LAKEVIEW HIGH SCHOOL
St. Clair Shores
Marguerite E. Todt

LINCOLN PARK HIGH SCHOOL
Lincoln Park
Jeanette Hatley

MONROE HIGH SCHOOL
Monroe
James R. Deworken

MOTT HIGH SCHOOL
Warren
Myra Potocsky

PETOSKEY HIGH SCHOOL
Petoskey
Paul Andrews

ROMULUS HIGH SCHOOL
Romulus
Robert J. Jenkins

UTICA HIGH SCHOOL
Utica
Diane C. Whiteford

WARREN WOODS HIGH SCHOOL
Warren
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PREFACE

The Research and Development Program in Vocational-Technical Education at Michigan State University is rooted in what is known as the clinical approach to teacher education and program experimentation. This approach recognizes that theoretical contructs must be tried out in the area of professional practice in local schools under controlled conditions.

Administration of R and D operations is the responsibility of faculty and staff in the Department of Secondary Education and Curriculum, under contract with the U.S. Office of Education. Financing comes from three sources: research funds under the National Vocational Education Act of 1963, Michigan State University, and state vocational education funds. The role of R and D is to try out various concepts and make the results known. Whether or not any methods or programs developed become part of a school system's operation is entirely in the hands of the school.

Very briefly, the work of the R and D Program fits into three broad areas:

> Program development through clinical school sites: This phase includes the pilot demonstration projects in distributive education and merketing, food sales and service, and shared-time programs, as well as the National Vocational Office Block Project.
>
> Vocational teacher education through clinical school systems: Local schools are used to train and try out personnel. Teaching interns will be able to work and learn in real settings, under the direction of experienced professionals.
>
> Allied research and development activities: Includes basic research in, for example: evaluation systems and workshops, conferences and seminars.

Improved techniques and the subsequent need for expanded distributive education curriculums to teach these techniques are among the prime concerns to the Research and Development Program in Vocational-Technical Education at Michigan State University. The "key concept" in the Distributive Education Project was the project method of instruction.

Broadly speaking, the project method integrated classroom instruction with a series of individually designed learning activities or projects related to students' occupational objectives. While it is used in other disciplines, the project method is relatively new to distributive education.

In reviewing the project and cooperative methods, the "compared to" often becomes "opposed to." It was not the purpose of this study to establish opposing camps, but rather to examine the two methods

according to educational criteria.

As Mary V. Marks, U.S.O.E., points out, both methods seek the same learning outcomes. These generally include: integration of theory and practice; understanding the role of distributive occupations in the economy; evaluation of aptitudes and abilities in connection with job situations; greater confidence in one's own judgments; and acceptance of responsibility for one's own efforts.

Operationally, the project method would expand the variety, applicability and complexity of occupational experiences possible through an on-the-job program. For example, a student might be interested in advertising in a small business situation. As a project, the student might spend some time with one or more local merchants, the advertising manager of a local newspaper, an advertising agency, and advertising specialists at colleges, depending on available resources. He then might evaluate the market situation, the audience, and available media in the framework of a budget and product; and design and produce an advertising campaign or long-term program. This would be done under the supervision of the teacher-coordinator and local professional people.

At this point, a distinction between cooperative and project methods might be made on several grounds. If a part-time job could be found for the student where he would be involved with advertising, he probably could not be expected to get exposure to, or responsibility for, the entire advertising effort. Also, it might be difficult to find occupational experience jobs for as many students as are interested in advertising. Both these problems are easily handled by designing simulated jobs.

The research study reported herein included a combination in which 11th grade classes operated with the project method, while the 12th grade used the cooperative approach. Control groups were provided by 11th and 12th grade Social Science and English classes. To maintain uniformity among test groups, all Pilot Schools used curricular units specifically prepared for this project. Projects must be tailored to student needs, thus allowing variation among classes. However, basic project outlines have been spelled out for general categories of distributive occupations.

Distributive education, as used in this report, refers to courses or programs that provide necessary information, skills and attitudes to adequately prepare the learner for employment in the fields of wholesaling, retailing, and the service industries--advertising, transportation, storage, insurance, real estate, banking, feeding and lodging--together with other industries that make up the total field of distribution.

Dr. Peter G. Haines
Director of Research
and Development Program

INTRODUCTION AND PURPOSE

In his concern for the status and direction of American education, the late President John F. Kennedy delivered a message to Congress in 1961 in which he called for the establishment of an advisory group to review and evaluate existing Federal commitments to vocational education. In October 1961, the Panel of Consultants on Vocational Education was officially appointed by the Secretary of Health, Education, and Welfare. The 1963 report of the Panel suggested several changes for existing programs of vocational education. Foremost among these was a recommendation that vocational education programs be made available to more students in the secondary schools.[1] The members of the Panel recommended the development of pre-employment, in-school distributive education training programs which would be offered in addition to the existing cooperative work-study programs. The members implied that this was desirable to make needed vocational instruction available to more students.[2] The subsequent passage of the Vocational Education Act of 1963 (PL 88-210), embodied many of the recommendations in the report of the Panel of Consultants. The Act specifically provided for the establishment of pre-employment, in-school preparatory training programs in distributive education. Such programs in distributive education now, under the Act, are available to unemployed youth over fourteen years of age.

Mary V. Marks, U.S.O.E. Program Specialist in Distributive Education, in a paper delivered at the 1963 National Clinic, made first mention of how instruction could be provided in the newly emerging programs of pre-employment education in distribution and marketing. Marks suggested and described another approach to the teaching of distributive education:

> In addition to the cooperative method of training, participation activities. . .also include group or individual projects which may be used by the instructor to encourage vocationally-centered learning. These may take place in a specially-equipped classroom, in a field assignment of narrow scope, and in situations simulating experiences of varying

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[1] U.S. Department of Health, Education, and Welfare, Office of Education, Education for a Changing World of Work, OE 80021 (Washington: Government Printing Office, 1963), p.226.

[2] Ibid., p. 227.

[3] U.S. Congress, Senate Committee on Labor and Public Welfare, Selected Education Acts of 1963, 88th. Congress, 1st. Session, 1963, p.97.

> degrees of sophistication related to employment opportunities.[4]

More recently, the United States Office of Education formally endorsed the project method of instruction as a vehicle for providing in-school preparatory distributive education, as it was provided for in the Vocational Education Act of 1963. At a meeting of the American Vocational Association in December 1965, Miss Marks reported that the project method as a teaching device "seeks the same learning outcomes as does the cooperative method. . ." Therefore, she concluded, it is the objective of the project method of instruction to accomplish goals similar to those of the cooperative method of instruction.[5]

PURPOSE OF THE STUDY

Before any new method of teaching can be widely accepted, it must be tested and evaluated as to its effectiveness and feasibility as an educational tool for the classroom. The project method, if it proves effective in achieving the purposes of pre-employment training, will provide answers to several problems persistently associated with the cooperative method. Employing in-school instruction as contrasted to on-the-job training, the project method would:

1. Permit a longer period of personal and educational development within a more fully controlled environment for the immature student.

2. Offer pre-employment training for the student whose physical development or appearance makes on-the-job training during high school inappropriate.

3. Allow longer time and appropriate experiences to help the student make a vocational choice.

4. Accommodate larger numbers of students in communities which have limited numbers of on-the-job training stations.

5. Reduce the cost in time and dollars of providing pre-employment vocational preparation.

This study compared the effectiveness of project and cooperative

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[4]Mary V. Marks, "The Vocational Approach in Education for Distribution," (Address before the National Clinic on Distributive Education, Washington, D.C., October, 1963). (U.S.O.E. Mimeo Printing), pp. 4-5.

[5]Mary V. Marks, "The Project Method in Action," (Address before the National Association of Distributive Education Teachers, American Vocational Association Convention, Miami Beach, Florida, December 9, 1965). (U.S.O.E. Mimeo Printing), p. 2.

methods of teaching high school distributive education but was limited to achievement in two competency areas: economic understanding and sales comprehension. Specifically, the study attempted to answer these questions:

1. Is there a significant difference in performance level between eleventh-grade project method and twelfth-grade cooperative method students on certain standardized sales comprehension tests?

2. Do these groups differ significantly on results for certain standardized tests in economic understanding?

3. How important is student's level of prior achievement in determining outcomes on the tests in sales comprehension and economic understanding?

4. What are the effects of socio-economic status, age, and sex when determining the significance of scores on the standardized tests of sales comprehension and economic understanding?

5. Does the teacher's attitude significantly influence students' scores on the standardized sales tests?

IMPORTANCE OF THE STUDY

Neither the project nor the cooperative methods of instruction in distributive education has been subjected to empirical testing regarding their effectiveness in the teaching of the various competencies presumed to be essential to a successful distributive worker. Because of the absence of sufficient research and literature on the relative effectiveness of the project and cooperative methods, it was decided that a study concerned with a description and comparison of these two methods of teaching should be made.

Recent endorsement of the U.S.O.E. of the project method as a way to provide in-school preparatory distributive education suggests a major national effort to generate new project method classes in the secondary schools. This movement supporting recent Federal legislation concerning vocational education suggests a need to investigate the effectiveness of this method.

SETTING OF THE STUDY

The study took place in seventeen Michigan high schools. Four groups

of students were used in twelve of the schools. They were:

....an eleventh-grade distributive education project method class,

....an eleventh-grade non-distributive education class (English or social science),

....a twelfth-grade distributive education class taught by the cooperative method of instruction, and

....a twelfth-grade non-distributive education class (English or social science).

In four of the schools only two groups of students were utilized, an eleventh-grade distributive education class taught by the project method of instruction and an eleventh-grade non-distributive education class (English or social science). One school was eliminated because test results were lost in the mails. The groups of distributive education students, and eleventh-grade and twelfth-grade students in the non-distributive education classes comprised a total population of 987 students All were administered, in pre- and post-test situations, standardized achievement tests of reading comprehension, economic understanding, and sales comprehension.

Each of the eleventh-grade distributive education project method classes was a single period in length (usually fifty minutes) and met five days a week for one year. Each teacher was provided with a curriculum guide and units of study which included content material integrated with projects designed for individual students as well as groups of students. The curriculum guide and teaching units for the eleventh-grade project class were developed at Michigan State University.

The units of instruction included in the period from September 1966 to January 1967 were entitled "Employment Orientation," "Self-Improvement: Vocational, Educational, and Personal," and "The Sales Process." Basic economic concepts are included in all these units.

The twelfth-grade distributive education cooperative method classes were also a single period in length, five days a week for one year. The students were employed in distributive occupations at least fifteen hours per week. The cooperative classes were taught in the customary manner, relating classroom instruction to the students' occupational experiences. Cooperative students had economic and sales experiences at their training stations and were exposed to these concepts in their units of study.

The control classes were either English or social science classes. They were comprised of non-distributive education students and were used for comparison purposes only.

The selection procedure produced a final sample of 251 subjects in the eleventh-grade project method group, 299 in the eleventh-grade control group, 216 in the twelfth-grade cooperative method group, and 221 in the twelfth-grade control group, making a total population of 987 subjects.

EXPERIMENTAL DESIGN

Four groups of students in ten schools were compared on improvement in sales comprehension and economic understanding based on results of standardized tests. The quasi-experimental design is represented by the following pre-test, treatment, post-test scheme:

O_1	X_1	O_1
O_2		O_2
O_3	X_3	O_3
O_4		O_4

The following types of data were collected concerning the schools, students, and teachers:

1. Information regarding the socio-economic status of the school, community, and of the parents of the students included in the study;

2. Estimates of each student's prior achievement based on results of a standardized test in reading;

3. Scores for each student on certain standardized tests of economic understanding, sales comprehension, and sales terms;

4. Personal data sheets on each student and on each teacher;

5. Scores on a teacher attitude inventory for each distributive education teacher.

The factors of age, sex, socio-economic status, prior achievement of student, and teacher attitude were identified as independent variables which might contribute to the results of the standardized tests. If so, these factors would contaminate the apparent effects of the instructional method. Not knowing to what extent these factors would bias the results of the treatment, it was assumed that these factors could make all, or one hundred per cent, of the difference in student achievement on the standardized tests measuring sales comprehension

and economic understanding. Thus, only when these factors were successfully controlled or adjusted for could any difference in scores be attributed to the method. Therefore, the design includes one-way classification analyses of covariance to adjust for the initial difference between the groups of students.

ANALYSIS OF DATA

The initial procedure of the data processing involved a statistical analysis of the raw scores of the standardized tests used in the study (STEP Reading, Form 2A;[6] Test of Economic Understanding, Forms A and B;[7] Test of Sales Aptitude;[8] and Sales Terms Test).[9]

> Editor's Note: The author recognizes that there is no evidence that tests of Economic Understanding, Sales Aptitude and Sales Terms are valid for determining economic understanding and sales comprehension. However they represent the best tests available with standardization.

The raw scores were processed on a CDC 3600 Computer, yielding the mean scores, the standard deviations, percentile ranks and standard scores for each of the groups in each school. This statistical analysis was conducted in order to provide the researcher with information needed to determine the feasibility of more complex statistical comparisons and analyses.

From worksheets prepared by the researcher and his staff, a data processing card was key-punched for each of the 987 students included in the study. These cards contained twenty-one variables used in the analysis.

Three statistical procedures were used in the analysis of the total data: (1) simple correlations, (2) t-tests, and (3) analysis of covariance.

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[6]Sequential Tests of Educational Progress, Reading Form 2A; (Princeton, N.J.: Cooperative Test Division, Educational Testing Service, 1957).

[7]Test of Economic Understanding, Forms A and B; (Chicago, Ill.: Science Research Associates, 1963).

[8]Test of Sales Aptitude, (A Test for Measuring Knowledge of Basic Principles of Selling); (New Rochelle, N.Y.: Martin M. Bruce, Ph.D., 1960).

[9]Factored Aptitude Series, Sales Terms Test; (New York, N.Y.: Industrial Psychology, Inc., 1956).

Nine different treatments of the twenty-one variables were run to obtain simple correlations, mean scores, and standard deviations in order to determine the effects, if any, of the independent variables (age, sex, socio-economic status, prior student achievement, and teacher attitude) on dependent variables (student scores on standardized tests of economic understanding and sales comprehension). These data were then analyzed to determine whether a relationship existed between and among the twenty-one variables.

T-tests were computed on the STEP-Reading scores; the Test of Economic Understanding, Forms A and B scores; the Sales Aptitude Test scores; and the Sales Terms Test scores. These tests were used to determine the significance of the differences of the mean scores obtained by each of the four groups.

In addition and as a result of the simple correlations and t-tests that were run, one-way classification analyses of covariance were performed with respect to scores on the criterion instruments of this study. They were the Test of Economic Understanding, Form B, the Test of Sales Aptitude, and the Sales Terms Tests.

Scores on the Test of Economic Understanding, Form A, and the STEP-Reading, Form A were used as concomitant or auxiliary information.

Group means, rather than individual student scores, were used as the unit of analysis. The researcher was interested in the groups, not individual student performance.

In the series of analyses, the null hypotheses under test were:

Ho_1: That there is no significant difference in student achievement on tests of sales comprehension between students who have studied under the project method of instruction and students who have studied under the cooperative method of instruction in distributive education.

Ho_2: That there is no significant difference in student achievement on tests of economic understanding between students who have studied under the project method of instruction and students who have studied under the cooperative method of instruction in distributive education.

Ho_3: That prior achievement, as inferred from scores in the STEP-Reading, Form A, is of no significance in assessing the effect of each of the two methods of instruction, as measured by standardized test scores in economic understanding and sales comprehension.

Ho_4: That socio-economic status is of no significance in assessing the effect of each of the two methods of instruction, as

measured by standardized test scores in economic understanding and sales comprehension.

Ho_5: That students' age is of no significance in assessing the effect of each of the two methods of instruction, as measured by standardized test scores in economic understanding and sales comprehension.

Ho_6: That sex of students is of no significance in assessing the effect of each of the two methods of instruction, as measured by standardized test scores in economic understanding and sales comprehension.

FINDINGS

Analysis of the correlation coefficients, using all subjects, revealed that the scores received on the STEP-Reading correlated positively but not extremely high with the scores on the other four standardized tests (with Economics, Form A, .540; with Economics, Form B, .535; with Sales Aptitude, 1339; with Sales Terms, .541). When correlations were run on the separate groups, the coefficients of correlation were also positive and reasonably high in each case.

As a further test of significance of prior achievement, t-tests were computed on the STEP-Reading scores for three combinations of groups. The results of the T-tests showed: (1) that the difference between the mean scores was significant (at the .05 level of confidence) when comparing each of the distributive education groups (project and cooperative methods) with their respective control classes -- in each case, the control class scored higher and (2) there was no significant difference on scores between the eleventh-grade project method and the twelfth-grade cooperative method classes. Tables 1, 2, and 3 present the t-test results and indicate the statistical significance.

To obtain a clearer and more precise interpretation of the significance of the test scores, one-way classification analyses of covariance were performed with respect to scores on the Test of Economic Understanding, Form B, the Test of Sales Aptitude, and the Sales Terms Test (the three criterion instruments). Scores on the Test of Economic Understanding, Form A, and the STEP-Reading, Form 2A (pre-test data) were used as concomitant information. The purpose was to adjust for the initial differences between groups of students. The unit of analysis was group means, and analyses of covariance were computed for the total eleventh-grade group -- groups one and two --(Table 4), for the total twelfth-grade group -- groups three and four -- (Table 5), and for the distributive education groups -- the project and cooperative groups, one and three -- (Table 6).

TABLE 1
MEANS AND T-TESTS FOR THE
TWO DISTRIBUTIVE EDUCATION GROUPS
ON THE STEP-READING

Test	Group 1 11th-Grade Project Means (N=251)	Group 3 12th-Grade Cooperative Means (N=216)	Value of t
STEP-Reading	40.49	41.36	-1.88

TABLE 2
MEANS AND T-TESTS FOR THE
ELEVENTH-GRADE GROUPS
ON THE STEP-READING

Test	Group 1 11th-Grade Project Means (N=251)	Group 2 12th-Grade Control Means (N=299)	Value of t
STEP-Reading	40.49	43.28	12.13*

TABLE 3
MEANS AND T-TESTS FOR THE
TWELFTH-GRADE GROUPS
ON THE STEP-READING

Test	Group 3 12th-Grade Cooperative Means (N=216)	Group 4 12th-Grade Control Means (N=221)	Value of t
STEP-Reading	41.36	46.00	7.73*

*Significant at the .05 level of confidence, tabled value of 1.96.

TABLE 4
MEANS, ADJUSTED MEANS, AND F RESULTS FOR THE
ELEVENTH-GRADE GROUP FOR THE THREE CRITERION INSTRUMENTS

TEST	Treatment Group	Raw Means	Adjusted Means	F	Significance
Sales Aptitude	1	13.72	-0.731	.83	NS
Sales Aptitude	2	14.39	+0.731		
Sales Terms	1	19.83	-0.503	3.451	*
Sales Terms	2	22.04	+0.503		
Economics, B	1	17.62	-0.066	0.068	NS
Economics, B	2	18.88	+0.066		

TABLE 5
MEANS, ADJUSTED MEANS, AND F RESULTS FOR THE
TWELFTH-GRADE GROUP FOR THE THREE CRITERION INSTRUMENTS

TEST	Treatment Group	Raw Means	Adjusted Means	F	Significance
Sales Aptitude	3	18.44	-1.038	1.156	NS
Sales Aptitude	4	19.53	+1.038		
Sales Terms	3	22.67	-0.226	0.283	
Sales Terms	4	24.01	+0.226		
Economics, B	3	18.04	-0.007	.000	NS
Economics, B	4	21.00	+0.007		

TABLE 6
MEANS, ADJUSTED MEANS, AND F RESULTS FOR THE
PROJECT METHOD AND COOPERATIVE METHOD GROUPS
FOR THE THREE CRITERION INSTRUMENTS

TEST	Treatment Group	Raw Means	Adjusted Means	F	Significance
Sales Aptitude	1	13.56	-2.389	7.473	*
Sales Aptitude	3	18.44	+2.389		
Sales Terms	1	19.83	-1.072	10.766	*
Sales Terms	3	22.67	+1.072		
Economics, B	1	17.62	-0.337	2.757	NS
Economics, B	3	18.04	+0.337		

*Significance at the .05 confidence level = 3.24.

Sales Comprehension

Table 6 indicates significance between the project method and the cooperative method students in the sales aptitude and sales terms tests. This indicates that the cooperative method students appear to have done significantly better on these two tests. The significant difference between the two groups in the results on the Test of Sales Aptitude and the Sales Terms Test warranted rejection of the null hypothesis (Ho_1). This indicates that there is a significant difference in student achievement on tests of sales comprehension wherein students who have studied under the project method do less well then those studying under the cooperative method of instruction in distributive education.

Economic Understanding

The lack of significance of difference between the two groups in the results on the Test of Economic Understanding, Form B, warranted acceptance of the null hypothesis (Ho_2). This indicates that there is no significant difference in student achievement on tests of economic understanding between students who have been taught by the methods with special materials in the project classes and students who have studied under the cooperative method of instruction in distributive education.

Prior Achievement

Use of a reading comprehension test was considered to be an adequate means of measuring students' prior achievement level. Results of the analyses indicated that students who scored high on the STEP-Reading performed equally well on the other standardized tests. On the whole, the students in the two control groups scored higher than the distributive education students on the reading comprehension test. There were high correlations between the STEP-Reading scores and the other standardized test scores. The t-tests performed also revealed a high level of correlation. Also, when the analyses of covariance were computed, the STEP-Reading scores again were significantly correlated to several of the other test scores. However, the scores on the STEP-Reading were not significantly different for the project method and the cooperative method groups.

Therefore, the null hypothesis (Ho_3) was accepted. That is, prior achievement, as inferred from scores in the STEP-Reading, Form 2A, is of no significance in assessing the effect of each of the two methods of instruction, as measured by standardized test scores in economic understanding and sales comprehension.

Socio-Economic Status

Four variables were considered in the analysis of the correlation between socio-economic status and student achievement on the several standardized tests: the Duncan Index, the Socio-Economic Index, the Racial-Ethnic Intermix Index, and the Occupations Index. When the correlation coefficients were observed for the total group, the project method group and the cooperative method group, the information obtained through the Messier Index (Socio-Economic Index, Racial-Ethnic Intermix Index, and Occupations Index) showed internal correlation but a negative correlation with the Duncan Index. The Messier Index information showed no significant correlation with the scores of the standardized tests, although the Duncan Index correlates significantly with four of the five tests -- the STEP-Reading, the Tests of Economic Understanding, Forms A and B, and the Sales Terms Test.

Therefore, the null hypothesis (H_{o4}) was accepted. This means that socio-economic status is of no significance in assessing the effect of each of the two methods of instruction, as measured by standardized test scores in economic understanding and sales comprehension.

There was only a slight age difference between the four groups of students. Consequently, the analysis revealed a lack of correlation between age and test scores. As a result, the null hypothesis (H_{o5}) was accepted. This indicates that students' age is of no significance in assessing the effect of each of the two methods of instruction as measured by standardized test scores in economic understanding and sales comprehension.

Relation of Sex and Test Scores

To discover the extent of the significance of the differences between the means of the standardized test scores between girls and boys, t-tests were computed. The sporadic significance between means indicated by the t-tests coupled with the total lack of correlation between sex and the test scores as shown in the simple correlations led to the acceptance of the null hypothesis (H_{o6}). That is, sex of students is of no significance in assessing the effect of each of the two methods of instruction, as measured by standardized test scores in economic understanding and sales comprehension.

Teacher Attitude

Observation of the simple correlations run on groups one and three (the groups involving the distributive education teachers) revealed low coefficients of correlation between teacher attitude inventory (MTAI) scores and student scores on the five standardized tests. The null hypothesis (H_{o7}) that teacher attitude, as measured by a teacher attitude inventory, is of no significance in assessing the effect of

each of the two methods of instruction, as measured by standardized test scores in economic understanding and sales comprehension, was accepted.

SUMMARY OF MAJOR FINDINGS

1. There was no statistically significant correlation between: (a) the variables of students' socio-economic status, students' age, students' sex, and teachers' attitude inventory scores and (b) the scores students attain on standardized achievement tests measuring reading comprehension, economic understanding, and sales comprehension.

2. There was a positive correlation between students' prior achievement and scores students attain on standardized achievement tests of economic understanding and sales comprehension. This was inferred from scores achieved on the STEP-Reading tests.

3. The two control groups (English and/or social science classes) on the whole performed as well as or, in some cases, better than the two distributive education groups on the tests of economic understanding and sales comprehension. However, the differences in the scores of the two grade-level control groups and their respective distributive education groups were not significant.

4. The achievement of cooperative method classes on the tests of sales comprehension were significantly higher than those of the project method classes.

5. There was no significant difference between the scores of the project method and cooperative method groups on the test of economic understanding.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are drawn from the findings of this study. These conclusions are pertinent to and limited by the assumptions and design of the study. Any conclusions based upon the results of the study are tentative and in need of further substantiating research.

1. Because of the lack of significant differences in scores between the control classes and the distributive education classes, one cannot conclude here that non-distributive

education students and distributive education students are being taught and are learning the same concepts of economic understanding and sales comprehension.

2. The results and the design of this study led the researcher to conclude that the cooperative method group, on the whole, performs somewhat better than the project method group.

   Again, it may be said that the standardized tests of economic understanding and sales comprehension, because of their generalized content, were not sufficiently sophisticated instruments to measure effectively the differences between these two groups, and, therefore, the two methods of instruction. The cooperative method students have additional experiences in their on-the-job activities; the project method students have various and different experiences in the projects they complete. It is plausible that these tests do not measure differences in the amount and kind of learning such differing experiences bring about.

   The teachers themselves may have been a contributory factor in the difficulty in assessing the effectiveness of the two methods of instruction. All had no previous experience in teaching by the project method. These teachers did have a wide variety of materials, teaching aids, assistance, and teacher training available to them for use with their project method classes. It is conceivable that this attention and assistance caused these teachers to be not only effective project method teachers but also teachers who unconsciously incorporated some of these methods and materials into their cooperative method classes. This would obviously result in a lessening of measurable differences between the two groups.

   Any new method of instruction or any innovation in education needs a period of time to take hold. It may also be concluded in this study that the teachers had not had sufficient time and experience to become completely familiar with their materials and with the project method of instruction.

3. The results of this study indicate that, based on the tests used, students who enroll in a distributive education program are not as academically talented as non-distributive education students.

4. In programing students for distributive education classes, the factors of age, sex, and socio-economic background should be of little or no consideration.

5. The design of the study did not include procedures for selec-

tion of students for either the project method or the cooperative method classes. Selection is considered a function of local school policy and was beyond the scope of this study.

It is possible that some uncontrolled variables were operating in the population that affected the effectiveness of the methods of instruction. Further studies are needed to determine what influence these variables may have.

In view of the findings and conclusions of this study, the following recommendations are made. It is suggested that the study be replicated with several changes and additions:

1. Valid instruments which effectively measure the outcomes expected for distributive education classes need to be developed.

2. Students should be selected for inclusion in further studies which use the project method class. Selection can be based on results of tests and inventories which measure attitude, interests, personality, and prior achievement. Information of this kind should be collected on all students included in the study for the purpose of determining the effect on individuals of each of the methods of instruction. Also, this information would permit the use of the paired-comparisons technique of analysis.

3. A variety of measurements need to be made on all students in the study. In addition to paper-and-pencil tests which measure knowledge in one or all of the competencies, students' attitudes and reactions should be measured in pre- and post-test situations. General measures of ability and prior achievement might also prove helpful (e.g., grades, intelligence tests).

4. Teachers who teach both the project method and cooperative method classes, teachers who teach only the project method classes, and teachers who teach only the cooperative method classes should be included in the study. It is suggested, also, that some project method classes and cooperative method classes be in different schools.

5. There should be provision for a longer period of evaluation and follow-up built into the study. Testing of students in the study should take place periodically during an entire school year, and these students should be evaluated during the next school year, in class or on the job.

The conclusions and recommendations also point out several areas for other kinds of research.

1. There is an imperative need for the development and validation of adequate instruments to measure outcomes in distributive education.

2. There is a need for distributive education to define through research the competencies basic to distributive education in behavioral terms so that outcomes in distributive education may be more accurately measured.

3. Future designs of studies of the effectiveness of the project method and cooperative method of instruction should include several different class arrangements. Comparisons and studies should be made of eleventh-grade project method classes with eleventh-grade traditional (non-project method, non-cooperative method) distributive education classes; twelfth-grade cooperative distributive education students who have had the eleventh-grade project method class with the twelfth-grade cooperative method distributive education students who have had the traditional eleventh-grade distributive education class.

Research is also needed to examine other plans of distributive education project method teaching, such as a double-period class in which the second period is a project-laboratory experience.